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In the Claims

This listing of the claims replaces all prior versions, and listings, of claims in the application. Amendments to the claims are shown by strikethrough for deleted matter or underlining for added matter.

1. (currently amended) A method of regenerating a metal pickling process solution,
comprising steps of:
 - providing said metal pickling process solution consisting essentially of hydrochloric acid and ferrous chloride;
 - adding an acid consisting essentially of sulfuric acid to said metal pickling process solution to produce a regenerated pickling process solution;
 - cooling the regenerated pickling process solution at a temperature sufficient to crystallize at least a portion of any ferrous sulfate salt in said regenerated pickling process solution; and
 - removing said crystallized ferrous sulfate salt from said regenerated pickling process solution.
2. (cancelled)
3. (previously presented) A method as set forth in Claim 1, wherein said step of adding said acid to said metal pickling process solution comprises adding said acid at a temperature lower than about 65 degrees F.
4. (previously presented) A method as set forth in Claim 1, wherein said step of adding said acid to said metal pickling process solution comprises adding said acid at a temperature lower than about 40 degrees F.

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5. (previously presented) A method as set forth in Claim 1, wherein said step of adding said acid to said metal pickling process solution comprises adding said acid at a temperature in the range of about 0 degrees F to about 40 degrees F.

6-7. (cancelled)

8. (previously presented) A method as set forth in Claim 1, further comprising a step of decreasing the solubility of said ferrous sulfate salt.

9. (previously presented) A method as set forth in Claim 1, wherein said acid is added in excess of a stoichiometric amount required to react with the ferrous chloride.

10. (previously presented) A method as set forth in Claim 1, further comprising a step of recycling the regenerated pickling process solution to a pickling bath.

11-22. (cancelled)

23. (previously presented) The method as set forth in claim 1, wherein said step of adding said acid to said metal pickling process solution is performed at a temperature range of about 30 °F to about 45°F.

24. (previously presented) The method as set forth in claim 8, wherein said step of decreasing the solubility of the ferrous sulfate comprises introducing sulfate ions to the pickling process solution.

25. (previously presented) The method as set forth in claim 8, wherein said step of decreasing the solubility of the ferrous sulfate comprises introducing sodium sulfate to the regenerated pickling process solution.

26. (currently amended) A method of regenerating a pickling solution comprising steps of:

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providing a pickling solution consisting essentially of hydrochloric acid and ferrous chloride;

converting the ferrous chloride to ferrous sulfate;

cooling the pickling solution at a temperature sufficient to crystallize ferrous sulfate salt; and

separating the crystallized ferrous sulfate salt from the pickling solution.

27. (previously presented) The method as set forth in claim 26, further comprising a step of cooling the pickling solution before the step of converting the ferrous chloride.

28. (previously presented) The method as set forth in claim 26, wherein the step of converting the ferrous chloride is performed at a temperature that minimizes oxidation of any ferrous species.

29. (previously presented) The method as set forth in claim 26, wherein the step of converting the ferrous chloride is performed at a temperature below about 65 °F.

30. (previously presented) The method as set forth in claim 29, wherein the temperature is between about 25 °F to about 35 °F.

31. (previously presented) The method as set forth in claim 26, further comprising a step of decreasing the solubility of ferrous sulfate in the pickling solution.

32. (previously presented) The method as set forth in claim 31, wherein the step of decreasing the solubility of ferrous sulfate in the pickling solution comprises adding a sulfate species to the pickling solution.

33. (previously presented) The method as set forth in claim 26, further comprising a step of heating the pickling solution after the step of separating the crystallized ferrous sulfate.

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34. (previously presented) The method as set forth in claim 26, wherein the step of converting the ferrous chloride comprises adding sulfuric acid to the pickling solution.

35. (previously presented) The method as set forth in claim 34, wherein the sulfuric acid is added in stoichiometric excess.